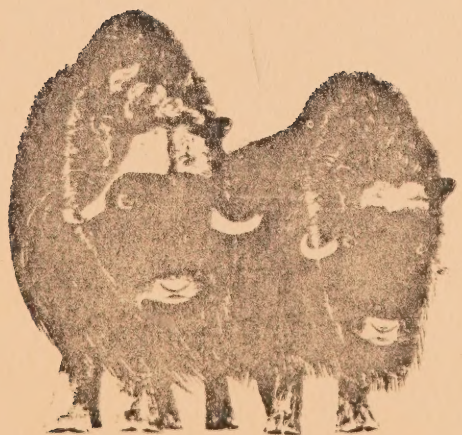


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MONITORING THE SOCIO-ECONOMIC IMPACTS  
OF THE NORMAN WELLS PROJECT





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June, 1983



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# NORMAN WELLS DATABASE PROJECT

## MONITORING THE SOCIO-ECONOMIC IMPACTS OF THE NORMAN WELLS PROJECT

June 1983

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# MONITORING THE SOCIO-ECONOMIC IMPACTS OF THE NORMAN WELLS PROJECT

## INTRODUCTION:

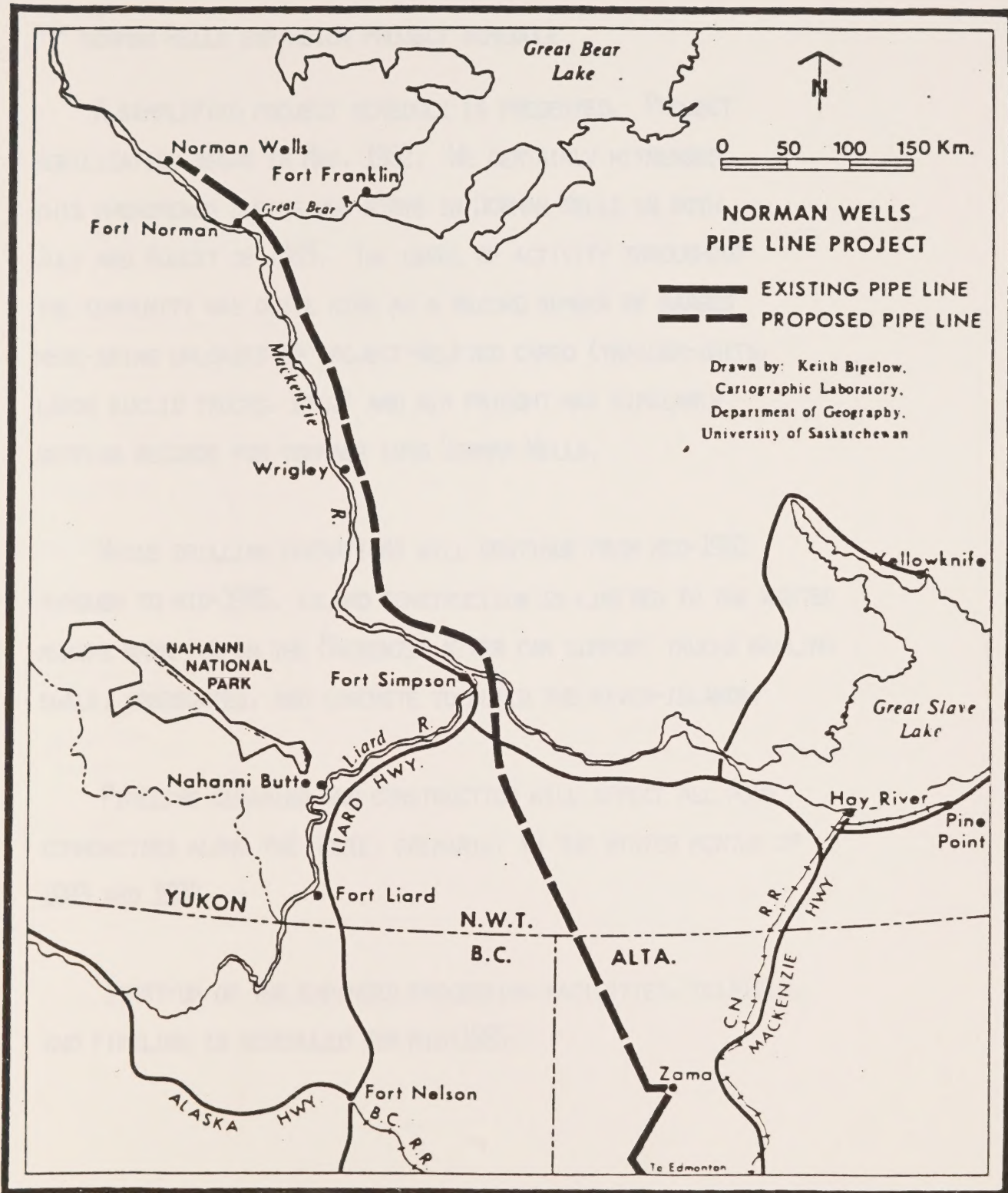
### \*\*\* MAP OF NORMAN WELLS PIPELINE PROJECT

THE NORMAN WELLS PROJECT IS EXPECTED TO HAVE A DIRECT AND POWERFUL IMPACT ON FOUR CENTRAL MACKENZIE VALLEY COMMUNITIES. ALTHOUGH MOST OF THE PROPOSED ECONOMIC DEVELOPMENT WILL TAKE PLACE IN NORMAN WELLS (SITE OF A NEW PROCESSING FACILITY AS WELL AS RIVER-ISLAND CONSTRUCTION TO AID ENHANCED RECOVERY OF HYDROCARBONS), THE THREE OTHER CENTRES (FORT NORMAN, WRIGLEY, AND FORT SIMPSON) WILL BE AFFECTED DURING CONSTRUCTION OF THE PIPELINE FROM NORMAN WELLS TO ZAMA LAKE, ALBERTA.

WHILE MOST PEOPLE IN THE AREA ARE ANTICIPATING SOME POSITIVE IMPACTS (MORE WAGE EMPLOYMENT), OTHERS ARE WORRIED ABOUT THE POTENTIAL NEGATIVE IMPACTS THAT MIGHT BE RELATED TO PROJECT DEVELOPMENT.









\*\*\* NORMAN WELLS EXPANSION PROJECT SCHEDULE

A SIMPLIFIED PROJECT SCHEDULE IS PRESENTED. PROJECT MOBILIZATION BEGAN IN MAY, 1982. WE CERTAINLY WITNESSED THIS PHENOMENON DURING OUR STAYS IN NORMAN WELLS IN BOTH JULY AND AUGUST OF 1983. THE LEVEL OF ACTIVITY THROUGHOUT THE COMMUNITY WAS QUITE HIGH AS A RECORD NUMBER OF BARGES WERE BEING UNLOADED OF PROJECT-RELATED CARGO (TRAILER-UNITS, LARGE EUCLID TRUCKS, ETC.) AND AIR FRIEGHT WAS SIMILARLY SETTING RECORDS FOR TONNAGE INTO NORMAN WELLS.

WHILE DRILLING OPERATIONS WILL CONTINUE FROM MID-1982 THROUGH TO MID-1985, ISLAND CONSTRUCTION IS LIMITED TO THE WINTER MONTHS WHEN ICE ON THE MACKENZIE RIVER CAN SUPPORT TRUCKS HAULING SHALE, AGGREGATES, AND CONCRETE TO BUILD THE RIVER-ISLANDS.

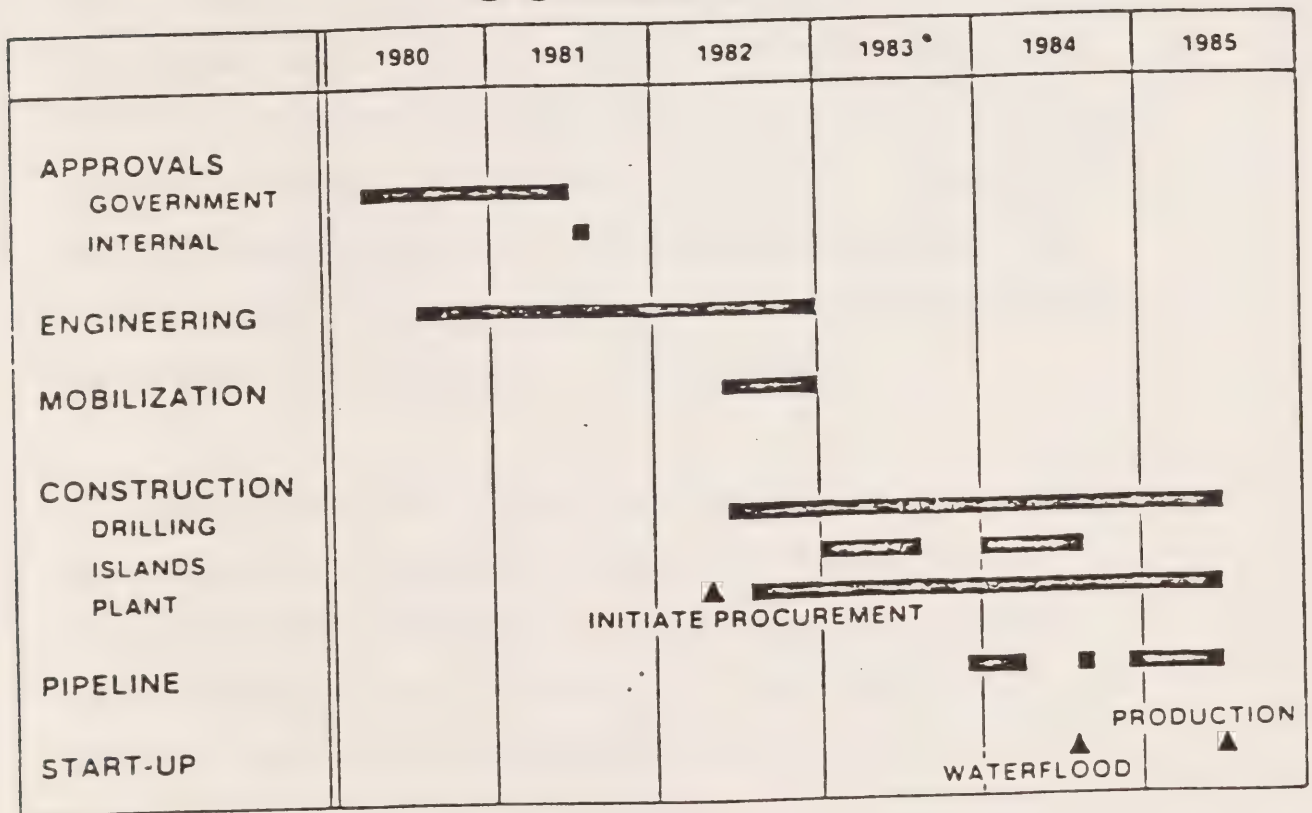
PIPELINE CLEARING AND CONSTRUCTION WILL AFFECT ALL FOUR COMMUNITIES ALONG THE ROUTE, PRIMARILY IN THE WINTER MONTHS OF 1983 AND 1984.

START-UP OF THE EXPANDED PROCESSING FACILITIES, OILFIELD, AND PIPELINE IS SCHEDULED FOR MID-1985.





# NORMAN WELLS EXPANSION PROJECT SCHEDULE



SOURCE: ESSO RESOURCES CANADA LIMITED (1982), "SOCIO-ECONOMIC  
ACTION PLANS: NORMAN WELLS PROJECT".



\*\*\* NORMAN WELLS: PROJECT-RELATED GROWTH AND MONITORING STUDIES

THE DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT (DIAND) HAS COMMISSIONED OUR NORTHERN RESEARCH TEAM FROM THE UNIVERSITY OF SASKATCHEWAN TO MONITOR THE SOCIO-ECONOMIC IMPACTS OF THE NORMAN WELLS PROJECT. THE PURPOSE OF OUR STUDY OVER THE PAST 15 MONTHS HAS BEEN TO PREPARE A 1982 DATABASE AT THE HOUSEHOLD AND BUSINESS FIRM LEVEL WHICH WOULD ALLOW FUTURE CHANGES IN THE COMMUNITIES TO BE MEASURED, AS WELL AS CONDUCT THE FIRST 'MONITORING' SURVEY OF BUSINESSES AND PUBLIC SERVICES IN 1983. IN OTHER WORDS, THESE 1982 AND 1983 STATISTICAL 'SNAP SHOTS' OF DEMOGRAPHIC AND ECONOMIC CONDITIONS WILL BE USED TO QUANTITATIVELY MONITOR IMPACTS OVER THE COURSE OF THE PROJECT ... 1982 TO 1986.

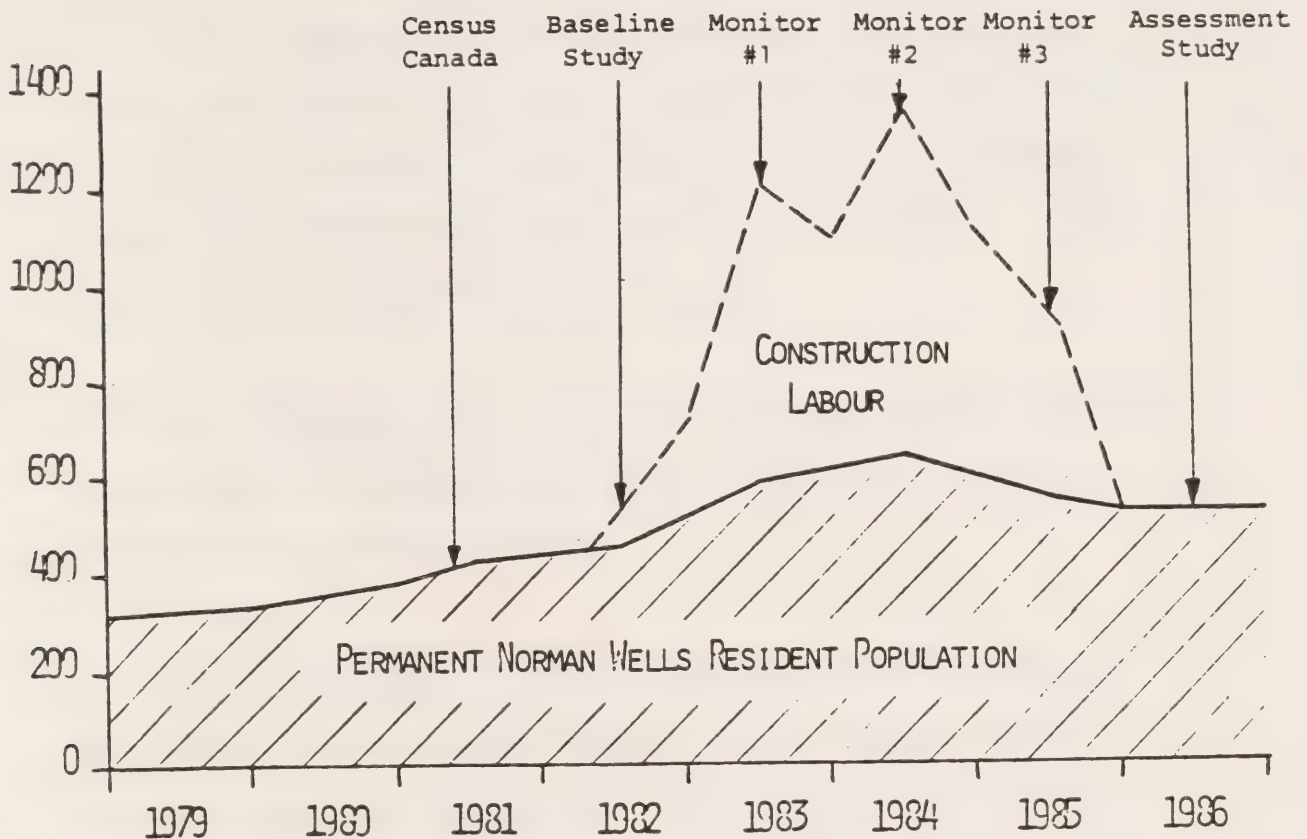
BY CORRELATING THE PEAK EMPLOYMENT PERIODS, PROJECT SCHEDULES, AND AVAILABILITY OF RESEARCH TEAM MEMBERS TO CONDUCT BASELINE AND MONITORING SURVEYS, WE PROPOSE TO CONDUCTS QUESTIONNAIRE SURVEYS IN THE SUMMER MONTHS OF EACH CONSTRUCTION YEAR (1982 TO 1985) AS WELL AS A FOLLOW-UP POST-CONSTRUCTION SURVEY IN 1986.

OUR PROPOSAL THEN, IS FOR AN ANNUAL BUSINESS SURVEY, AND A BI-ANNUAL HOUSEHOLD SURVEY. COMBINED WITH 1981 AND 1986 CENSUS CANADA DATA, WE SHOULD BE ABLE TO PUT TOGETHER A MOST USEFUL TOOL IN MONITORING SOCIO-ECONOMIC IMPACTS OF MEGA-PROJECTS.





## NORMAN WELLS: PROJECT-RELATED GROWTH AND MONITORING STUDIES



ADAPTED FROM: ESSO RESOURCES CANADA LIMITED (1982), "SOCIO-ECONOMIC ACTION PLANS: NORMAN WELLS PROJECT".



### \*\*\* IMPACT ASSESSMENT VS. MONITORING

ONE OF THE MOST POPULAR TOOLS TO BE EMPLOYED IN SOCIO-ECONOMIC APPRAISAL OF MEGA-PROJECTS IN CANADA HAS BEEN THE IMPACT ASSESSMENT STATEMENT. THIS TOOL WAS VERY POPULAR THROUGH THE 1970s, BUT DID NOT PROVIDE ADMINISTRATORS (USUALLY GOVERNMENT) ANY ELEMENT OF CONTROL OVER ADVERSE EFFECTS WHEN A PROJECT WAS ACTUALLY IN PROGRESS. AS A RESULT, THE CONCEPT OF MONITORING PROJECT IMPACTS THROUGHOUT PROJECT LIFE HAS SEEN RECENT APPLICATION (PAST 3-5 YEARS). A SHORT DEFINITION OF THESE TERMS FOLLOWS.

IMPACT ASSESSMENT IS A REVIEW OF THE PROBABLE CHANGES IN VARIOUS SOCIO-ECONOMIC CHARACTERISTICS WHICH MAY RESULT FROM A PROPOSED OR IMPENDING ACTION (CARTER, 1981:5).

PROJECT MONITORING IS A PROBLEM-SOLVING PROCESS WHICH BEGINS WITH PROBLEM FORMULATION AND PROCEEDS THROUGH A RESEARCH PHASE WHICH INCLUDES OPERATIONALIZING KEY INDICATORS OF CHANGE AND THE ESTABLISHMENT OF A DATA BASE FOR COMPARATIVE PURPOSES ... FOLLOWED BY ANALYTICAL AND JUDGEMENTAL PHASES (CARLEY & WALKER, 1981:15).

WHEREAS IMPACT ASSESSMENT REALLY GIVES ONLY ONE 'SNAP SHOT' OF THE PROJECT IMPACTS (LARGELY BASED ON PROJECTIONS), MONITORING ON A REGULAR, ONGOING BASIS WILL ALLOW SEVERAL STATISTICAL





'SNAP SHOTS' TO BE TAKEN. IN THIS WAY, THE IMPACT OF THE PROJECT UPON THE RESIDENTS OF THE COMMUNITIES CAN BE MONITORED AND, BY MEANS OF GOVERNMENT/DEVELOPERS INTERVENTION, POSITIVE EFFECTS OF THE PROJECT CAN BE ENCOURAGED AND NEGATIVE ONES CAN BE SOFTENED OR ELIMINATED.

ALTHOUGH THE GREATEST IMPACTS ARE EXPECTED, LOGICALLY, AT NORMAN WELLS, THE OTHER COMMUNITIES ALONG THE PROPOSED PIPELINE ROUTE AT FORT NORMAN, WRIGLEY, AND FORT SIMPSON, SHOULD BE MONITORED AS CLOSELY AS NORMAN WELLS. WE SHOULD REALLY CAPTURE THE ENTIRE DEVELOPMENT PICTURE IF WE CAN.



### \*\*\* SOCIO-ECONOMIC DATA MATRIX

CONCEPTUALLY, THE MONITORING PROGRAM'S QUESTIONNAIRE SURVEY DATA CAN BE REPRESENTED IN THE FOLLOWING SOCIO-ECONOMIC DATA MATRIX. THE MATRIX CONSISTS OF THREE-DIMENSIONS:

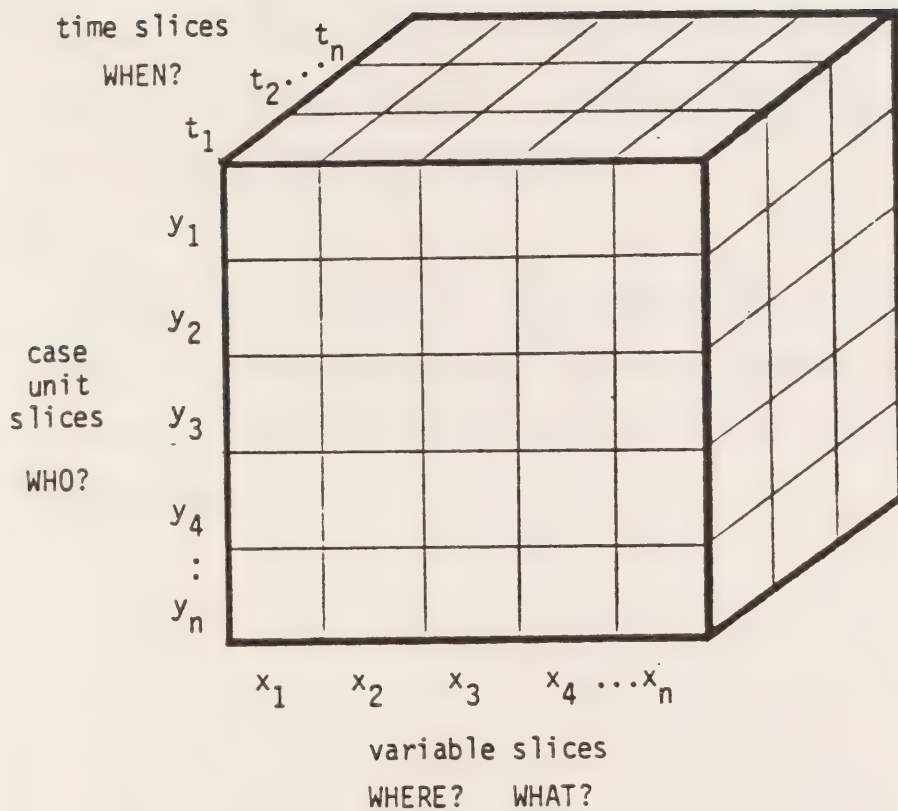
1. TEMPORAL DIMENSION: EACH SURVEY YEAR WILL PROVIDE US WITH DATA REPRESENTING INDIVIDUALS, HOUSEHOLDS, AND FIRMS SOCIO-ECONOMIC STATUS.
2. CASE UNIT DIMENSION: WHERE EACH INDIVIDUAL, FIRM OR HOUSEHOLD IS REPRESENTED.
3. SPATIAL-VARIABLE DIMENSION: THIS DIMENSION ANSWERS THE WHERE? AND WHAT? QUESTIONS.

ONE CAN APPRECIATE THE COMPLEXITY OF THE LARGE DATA MATRIX AND PERHAPS SOME OF PROBLEMS ONE MIGHT INCUR IN ITS MANIPULATION. NONETHELESS, THIS REPRESENTS A POWERFUL CONCEPTUAL TOOL IN MONITORING IMPACTS.





## SOCIO-ECONOMIC DATA MATRIX



$t_1$  = pre-construction  
(baseline)

$t_2$  = peak construction

$t_3$  = post-construction

$y_n$  = household member

$x_1$  = community

$x_2$  = age

$x_3$  = sex

$x_4$  = descent

$x_5$  = income



## \*\*\* BUSINESS AND PUBLIC SERVICES VARIABLES

TO COLLECT OUR FIELD DATA WE DECIDED THE BEST TOOL WE MIGHT EMPLOY WAS THE QUESTIONNAIRE. AS WELL, WE WOULD ATTEMPT A BLANKET SURVEY OF ALL BUSINESSES AND HOUSEHOLDS IN THE FOUR COMMUNITIES.

CERTAINLY, CONDUCTING EXTENSIVE SURVEYS ARE MORE EXPENSIVE THAN SECONDARY DATA SEARCHES, BUT THE BENEFITS CAN BE SEEN TO EASILY OUTWEIGH THE COSTS. FOR THE TYPE OF DATABASE AND MONITORING SYSTEM WE ENVISION, THE SURVEY QUESTIONNAIRE APPEARS INDISPENSABLE AS THE PRIMARY DATA COLLECTION TOOL.

DATA WERE COLLECTED VIA TWO COMPREHENSIVE SURVEYS. THE FIRST SURVEY, OF BUSINESSES AND PUBLIC SERVICES, RECORDED VARIOUS ECONOMIC ACTIVITIES OF THE FIRMS AS WELL AS EMPLOYEE REGISTRY INFORMATION.



## 1.0 COMMUNITY

### 2.0 BUSINESS NAME

#### 2.1 BUSINESS SECTOR

- local government
- territorial gov't
- federal gov't
- private

#### 2.2 BUSINESS TYPE

- medical
- education
- social services
- administrative
- retail
- hotel-restaurant
- transport
- construction
- mining
- manufacturing
- forestry
- traditional

## BUSINESS AND PUBLIC SERVICES DATA FILE

### 3.0 LABOUR FORCE

- employee name
- sex (male-female ratio)
- age
- birthplace
- descent
- occupations
- length of employment
- commuters/residence
- full/part-time

### 3.1 ECONOMIC

- trade areas
- wages paid out
- local business years
- total employees

### 3.2 PROJECT PERCEPTIONS

- impact on business

### 3.3 DEMOGRAPHIC

- employee name
- sex
- age
- birthplace
- descent

### 3.4 ECONOMIC

- occupations
- length of employment
- commuter/residence
- full/part-time

### 3.5 MIGRATION

- local residence years
- previous residence/years

## EMPLOYEE REGISTRY DATA FILE





## \*\*\* HOUSEHOLD SURVEY VARIABLES

THE SECOND SURVEY, OF HOUSEHOLDS<sup>1</sup> FOCUSSED ON EMPLOYMENT, RESIDENCY, AND OTHER DEMOGRAPHIC AND ECONOMIC INDICATORS IMPORTANT TO PROJECT IMPACT ASSESSMENT AND MONITORING.

<sup>1</sup> THROUGHOUT THE FIELD SURVEY PERIOD, A CONSISTENT DEFINITION OF HOUSEHOLD WAS APPLIED. TWO CRITERIA DEFINED A HOUSEHOLD FOR OUR PURPOSES: (1) A HOUSEHOLD IS ANY GROUP OF PERSONS SHARING COMMON LIVING ACCOMMODATIONS (THE SAME HOUSE OR APARTMENT), AND (2) AT LEAST ONE MEMBER OF THE HOUSEHOLD HAS BEEN A LOCAL RESIDENT FOR MORE THAN THE LAST TWELVE CONSECUTIVE MONTHS (AUGUST 1981 TO AUGUST 1982).



## 1.0 COMMUNITY

## 2.0 HOUSEHOLD CLASSIFICATION

- long-term residents (over 1 year)
- short-term residents (less than 1 year)

*\*Two criteria defined a household for our purposes: (1) a household is any group of persons sharing common living accommodations (the same house or apartment), AND (2) at least one member of the household has been a local resident for more than the last twelve consecutive months (August 1981 to August 1982).*

## HOUSEHOLD DATA FILE

## 3.0 DEMOGRAPHIC

- head of household name
- sex
- descent
- birthplace
- total members

## 3.1 ECONOMIC

- shopping-spending patterns
- goods-service consumption patterns
- economic activities
- occupations
- full/part-time
- commuters/work place
- household income (wage economy, transfer payments, traditional)

## 3.2 MIGRATION

- local resident years
- previous residences/years
- planned movements
- push/pull factors

## 3.3 PROJECT PERCEPTIONS

- perceived impacts
- local involvement

## 3.4 DEMOGRAPHIC

- household member name
- age/sex
- birthplace
- descent
- marital status
- head of household

## 3.5 ECONOMIC

- occupation
- length of employment
- commuter/work place
- full/part-time
- income sources

## HOUSEHOLD MEMBER REGISTRY FILE





## CONDUCTING THE FIELD SURVEY

INITIAL COMMUNITY CONTACTS: INITIAL CONTACTS WITH LOCAL AUTHORITIES BEGAN WITH TELEPHONE CALLS TO THE MANAGERS OF THE VARIOUS SETTLEMENT AND BAND COUNCILS. THIS ENABLED US TO IDENTIFY OURSELVES AND THE NATURE OF OUR PROPOSED WORK. ARRANGEMENTS WERE MADE THROUGH THE MANAGERS TO MEET WITH THEIR COUNCILS. THIS ADVANCE WARNING ALLOWED THESE OFFICIALS TO DISCUSS THIS MATTER WITH THEIR COUNCILS BEFORE WE ARRIVED IN THEIR COMMUNITY.

TESTING OF QUESTIONNAIRES: TESTING OF THE QUESTIONNAIRES IN THE FIELD WAS UNDERTAKEN IN LATE JULY 1982. RESIDENTS AND BUSINESS MANAGERS FROM VARIOUS ETHNIC AND ECONOMIC GROUPS IN NORMAN WELLS AND FORT NORMAN COMPLETED PRELIMINARY HOUSEHOLD AND/OR BUSINESS QUESTIONNAIRES. THEIR REACTIONS AND COMMENTS WERE NOTED AND THESE RESPONSES HELPED TO INITIATE SEVERAL IMPROVEMENTS. THE OVERALL EFFECT WAS TO SHORTEN THE QUESTIONNAIRE, FOCUSING ON THE KEY VARIABLES WE WOULD NEED IN MONITORING PROJECT IMPACTS.



BAND AND SETTLEMENT COUNCIL MEETINGS: IN EACH OF THE FOUR COMMUNITIES, FORMAL MEETINGS WERE HELD WITH THE LOCAL COUNCILS SOON AFTER OUR ARRIVAL. THE PURPOSE OF THESE MEETINGS WAS TO EXPLAIN THE NATURE AND CONTENT OF THE SURVEY TO ELECTED REPRESENTATIVES, ASSURING THEM THAT THE INFORMATION COLLECTED WAS TO BE KEPT IN STRICT CONFIDENCE.

FOLLOWING THIS PRESENTATION, APPROVAL OF OUR SURVEY PROGRAM WAS SOUGHT. CONSENT WAS OBTAINED FROM ALL OF THE SETTLEMENT AND BAND COUNCILS, AND ALL COUNCILS REQUESTED A COPY OF THE RESULTS OF THE QUESTIONNAIRE SURVEY FOR THEIR USE IN LOCAL AND REGIONAL MATTERS. WE ALSO ASKED FOR THE NAMES OF LOCAL RESIDENTS WHO MIGHT ASSIST US WITH THE SURVEY.



BUSINESS AND PUBLIC SERVICES SURVEY: THE SURVEY TEAM BEGAN ITS FIELD WORK BY CANVASSING ALL BUSINESSES AND PUBLIC SERVICES IN EACH COMMUNITY. THIS METHOD HAD A NUMBER OF ADVANTAGES:

1. THE RESEARCH TEAM HAD OPPORTUNITY TO DISCUSS THE PROJECT WITH MANY LEADING CITIZENS DURING THE BUSINESS/AGENCY INTERVIEW. THIS APPROACH NOT ONLY GAVE THESE PEOPLE A FIRST HAND ACCOUNT OF OUR PROGRAM BUT IT ALSO PROVIDED US WITH AN OVERVIEW OF THE LOCAL BUSINESS SITUATION.
2. AFTER COMPLETION OF THE BUSINESS QUESTIONNAIRE (ABOUT 10 TO 15 MINUTES DURATION) THE MANAGER WAS ASKED TO COMPLETE A HOUSEHOLD SURVEY (ABOUT 20 TO 30 MINUTES ON AVERAGE).
3. WHEN THIS WAS COMPLETE, A REQUEST TO CONDUCT SURVEYS OF THEIR EMPLOYEES WAS MADE. IN MOST INSTANCES, THIS REQUEST WAS GRANTED. THE SURVEYS WERE QUICKLY COMPLETED, AND THE RESPONDENTS HOME LOCATED ON A TOWN PLAN.

THIS APPROACH PROVED VERY SUCCESSFUL AND REDUCED THE NUMBER OF CALLS TO HOUSEHOLDS.





HOUSEHOLD SURVEY: THIS SURVEY WAS MORE COMPLICATED AND CONTAINED MORE SENSITIVE QUESTIONS THAN THE BUSINESS/PUBLIC SERVICE QUESTIONNAIRE. IN EACH COMMUNITY, THE FIRST HOUSEHOLD SURVEYS WERE DONE IN CONJUNCTION WITH THE BUSINESS/PUBLIC SERVICE QUESTIONNAIRE. FOR THOSE NOT CANVASSED AT WORK, HOUSEHOLD SURVEYS WERE CONDUCTED IN THE PERSON'S RESIDENCE. AGAIN, THE COMPLETED HOUSEHOLDS WERE LOCATED ON A TOWN PLAN TO REDUCE THE POSSIBILITY OF SURVEY DUPLICATION.

IN ALL FOUR CENTRES, LOCAL PEOPLE WERE HIRED TO ASSIST IN THIS WORK. IN TOTAL WE COMPLETED 341 HOUSEHOLD SURVEYS AND 159 BUSINESS SURVEYS. IN THE PROCESS SOME 856 EMPLOYEES WERE ENUMERATED ALONG WITH 1256 HOUSEHOLD MEMBERS.



## SUMMARY OF RESEARCH TEAM WORK (MAY 1982 TO MARCH 1983)

1. CONDUCTED MEETINGS WITH LOCAL OFFICIALS REGARDING THE NATURE AND PURPOSE OF THE DATABASE.
2. FIELD TESTED AND ACCORDINGLY ADJUSTED THE SURVEY QUESTIONNAIRE.
3. TRAINED AND SUPERVISED LOCAL FIELD ASSISTANTS AT NORMAN WELLS, FORT NORMAN, WRIGLEY AND FORT SIMPSON (WITH ASSISTANTS IN THE LATTER THREE COMMUNITIES BEING FLUENT IN THE SLAVEY LANGUAGE).
4. CONDUCTED BUSINESS AND HOUSEHOLD SURVEYS IN THE FIELD.
5. CODED SURVEY RESPONSES, COMPLETED DATA ENTRY AND COMPUTER PROGRAMMING, AND PREPARED A CODE BOOK OF THE COMPUTERIZED VARIABLES AND THEIR VALUES.
6. PREPARED COMPUTER PRINT-OUTS OF DATA FILES CONTAINING INFORMATION ON BUSINESSES AND PUBLIC SERVICES, LABOUR FORCE, COMMUNITY HOUSEHOLDS, AND HOUSEHOLD MEMBERS.
7. ARRANGED FOR DISTRIBUTION OF THESE PRODUCTS TO APPROPRIATE AGENCIES AND OFFICIALS.



\*\*\* NORMAN WELLS DATABASE PROJECT: INFORMATION STORAGE

FOLLOWING DATA COLLECTION, THE SURVEY RESULTS WERE CODED ONTO OPTICALLY SCANNABLE CODING SHEETS AND WERE ENTERED INTO THE UNIVERSITY OF SASKATCHEWAN'S DECSYSTEM-20 COMPUTER SYSTEM.

THE SURVEYS WERE CONSTRUCTED TO ALLOW SIMPLE CODING OF RESPONSES AND DATA. THE NEED FOR COMPUTER STORAGE OF THE DATA BECOMES READILY APPARENT WHEN NOTING THE SIZE OF THE DATA SETS.

WITH ALMOST 100,000 INFORMATION DATA BITS, THE DATABASE REPRESENTS AN EXTENSIVE FILE OF SURVEY INFORMATION (OVER THE 5-YEAR LIFE OF THE PROJECT WE MAY HAVE MORE THAN 500,000 DATA BITS TO WORK WITH).

THE STATISTICAL ANALYSIS OF THE DATA SHOULD BE ACCOMPLISHED WITH A MINIMUM OF INCONVENIENCE AND A MAXIMUM OF FLEXIBILITY (ADDING NEW VARIABLES, DATA COMPUTATIONS, STATISTICAL TESTING).

THE MAJOR ADVANTAGE OF USING COMPUTING FACILITIES IS THE SPEED WITH WHICH DATA MAY BE PROCESSED IN RESPONSE TO SPECIFIC REQUESTS FOR INFORMATION, IE. HOW MANY METIS TRUCK DRIVERS ARE THERE IN FORT SIMPSON, OR, WHAT IS THE AVERAGE INCOME OF ALL STATUS-INDIANS BETWEEN THE AGES OF 25 AND 50.





TABLE 1 NORMAN WELLS DATABASE PROJECT: INFORMATION STORAGE

| FILE   | CASE<br>UNIT        | NUMBER OF<br>CASES |   | NUMBER OF<br>VARIABLES |   | INFORMATION<br>DATA BITS |
|--------|---------------------|--------------------|---|------------------------|---|--------------------------|
| BUSDAT | BUSINESS            | 190                | x | 35                     | = | 6 650                    |
| BUSREG | EMPLOYEE            | 1200               | x | 15                     | = | 18 000                   |
| HSEDAT | HOUSEHOLD           | 360                | x | 150                    | = | 54 000                   |
| HSEREG | HOUSEHOLD<br>MEMBER | 1300               | x | 25                     | = | 32 500                   |
| TOTAL  |                     |                    |   |                        | = | 111 150                  |



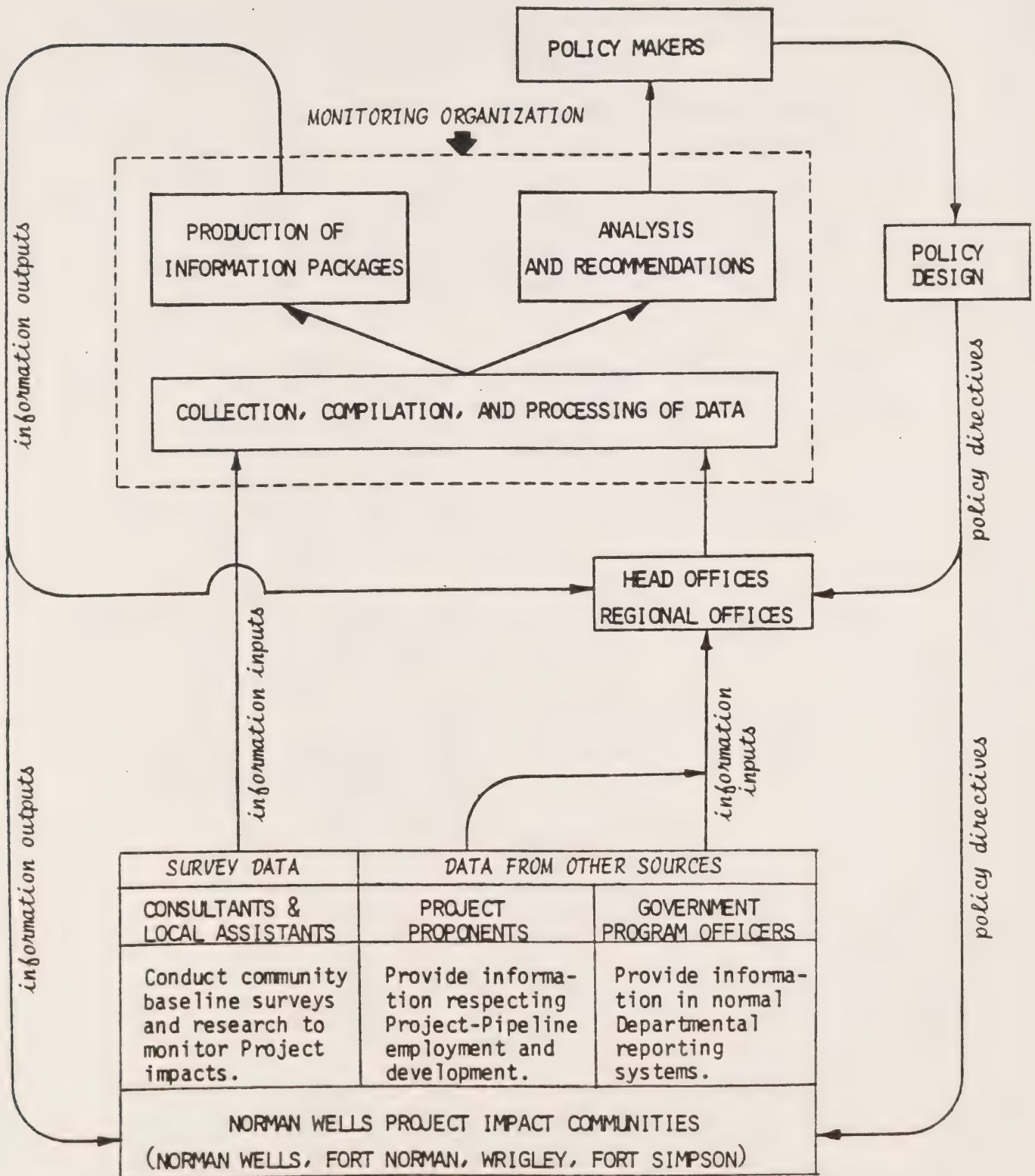
\*\*\* NORMAN WELLS PROJECT: INFORMATION FLOWS AND THE  
MONITORING SYSTEM

A SYSTEMATIC, ORDERLY FLOW OF INFORMATION IS NEEDED TO FACILITATE THE SUCCESSFUL MONITORING OF PROJECT IMPACTS. SUCH AN APPROACH REQUIRES THE FULL CO-OPERATION OF IMPACT COMMUNITY RESIDENTS, PRIVATE BUSINESS PEOPLE, AND PUBLIC SECTOR AGENCIES, AS WELL AS THE PROJECT PROPONENTS AND THEIR SUB-CONTRACTORS. IT IS ONLY THROUGH CO-OPERATION THAT WE MIGHT PROVIDE ACCURATE AND DETAILED ACCOUNTS OF THE IMPACT AREAS' CHANGING HOUSEHOLD AND BUSINESS ACTIVITIES.

CONCEPTUALLY, THE MONITORING PROGRAM FOR THE NORMAN WELLS PROJECT MAY BE REPRESENTED IN A SIMPLE FLOW DIAGRAM. THE FOUNDATION OF THE SYSTEM IS FORMED BY INFORMATION TO BE GATHERED FROM THE TARGET GROUP OF THE MONITORING ACTIVITY: RESIDENTS AND BUSINESSES OF THE FOUR PROJECT IMPACT COMMUNITIES. DATA IS COLLECTED IN THE COMMUNITIES BY THE MONITORING CONSULTANTS, PROJECT PROPONENTS, AND LOCAL GOVERNMENT AGENTS. THE CONSULTANTS GATHER FIELD SURVEY DATA, PROPONENTS PROVIDE EMPLOYMENT DATA, AND GOVERNMENT AGENCIES RELEASE VARIOUS SOCIO-ECONOMIC DATA NEEDED FOR THE MONITORING STUDY.



## NORMAN WELLS PROJECT: INFORMATION FLOWS AND THE MONITORING SYSTEM



ADAPTED FROM: PALMER, J. AND ST. PIERRE, M. (1974), "MONITORING SOCIO-ECONOMIC CHANGE" (OTTAWA: DINA).





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